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| APPLICATION NO.                                                                                                    | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.         | CONFIRMATION NO.       |
|--------------------------------------------------------------------------------------------------------------------|-------------|----------------------|-----------------------------|------------------------|
| 10/659,457                                                                                                         | 09/10/2003  | Murthi Nanja         | Intel/17226                 | 4880                   |
| 34431 7590 05/16/2007<br>HANLEY, FLIGHT & ZIMMERMAN, LLC<br>150 S. WACKER DRIVE<br>SUITE 2100<br>CHICAGO, IL 60606 |             |                      | EXAMINER<br>PHAM, CHRYSTINE |                        |
|                                                                                                                    |             |                      | ART UNIT<br>2192            | PAPER NUMBER           |
|                                                                                                                    |             |                      | MAIL DATE<br>05/16/2007     | DELIVERY MODE<br>PAPER |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

Application No.

10/659,457

Applicant(s)

NANJA ET AL.

Examiner

Chrystine Pham

Art Unit

2192

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 19 January 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |                                                                                                            |                                                                                         |
|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____                                                |

### **DETAILED ACTION**

1. This action is responsive to Paper filed on January 19, 2007. No claims have been amended. Claims 1-30 are presented for examination.

### ***Response to Arguments***

2. Applicant's arguments with respect to the Nanja reference (which Applicants have pointed out, as subject to co-assignment to or co-owned by Intel Corporation)(Remarks, page 12, last paragraph) have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-7, 11, 17-20, 23 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beadle et al. (US 6530075 B1, "Beadle") in view of Cierniak (US 2004/0168028 A1).

#### **Claim 1**

Beadle teaches a method of executing a non-native software instruction (see at least 404, 410 FIG.4 & associated text), the method comprising:

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generating a first native software instruction from a first instruction set based on the non-native software instruction, the generation of the first native software instruction occurring at the device (see at least 404 FIG.4 & associated text; *bytecode, class, method, executed, interpreter* col.5:38-51; FIG.3 & associated text); executing the first native software instruction at the device (see at least 404 FIG.4 & associated text; *bytecode, interpreter 404* col.6:24-52); generating a second native software instruction from a second instruction set based on the non-native software instruction, the generation of the second native software instruction occurring at the device (see at least 410 FIG.4 & associated text; *bytecode, just in time compiling, hot spot* col.5:38-51; col.6:24-52); and executing the second native software instruction at the device (see at least 410 FIG.4 & associated text).

Beadle does not expressly disclose receiving the non-native software instruction at a [mobile/wireless/handheld] device. However, Cierniak discloses a method of wirelessly receiving non-native instructions at a handheld device and just-in-time compiling (i.e., runtime configuration parameter) them to generate native instructions on the handheld device (see at least FIG.2 & associated text; *mobile devices, native code, JIT compiler* paragraph [0005]; *small memory computing system, JIT* paragraph [0016]). Beadle and Cierniak are analogous art because they are both directed to generating native code from intermediate language instructions. It would have been obvious to one of ordinary skill in the pertinent art at the time the invention was made to incorporate the teaching of Cierniak into that of Beadle for the inclusion of mobile runtime configuration parameter. And the motivation for doing so would have been to provide faster execution (via native

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code) of the non-native instructions on handheld devices (see at least Cierniak paragraph [0004]).

#### Claim 2

The rejection of base claim 1 is incorporated. Beadle further teaches counting a number of times the first native software instruction is executed (see at least *number of executions* col.5:65-col.6:10); and comparing the number of times the first native software instruction is executed to a threshold (see at least *threshold number* col.6:1-10), wherein generating the second native software instruction is in response to one of (i) the number equaling the threshold, and (ii) the number exceeding the threshold (see at least *threshold, hot spot, just in time compiler* col.6:1-10; *timer, counter, number of times, just in time compiling, interpreter* col.8:54-col.9:21).

#### Claim 3

The rejection of base claim 2 is incorporated. Beadle further teaches inserting instrumentation to count the number of times the first native software instruction is executed (see at least *threshold, hot spot, just in time compiler* col.6:1-10; *timer, counter, number of times, just in time compiling, interpreter* col.8:54-col.9:21).

#### Claim 4

The rejection of base claim 2 is incorporated. Beadle does not expressly disclose receiving the threshold via a mobile runtime configuration parameter. However,

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Cierniak discloses a method of wirelessly receiving non-native instructions at a handheld device and just-in-time compiling (i.e., runtime configuration parameter) them to generate native instructions on the handheld device (see at least FIG.2 & associated text; *mobile devices, native code, JIT compiler* paragraph [0005]; *small memory computing system, JIT* paragraph [0016]). Beadle and Cierniak are analogous art because they are both directed to generating native code from intermediate language instructions. It would have been obvious to one of ordinary skill in the pertinent art at the time the invention was made to incorporate the teaching of Cierniak into that of Beadle for the inclusion of mobile runtime configuration parameter. And the motivation for doing so would have been that, which has been cited for claim 1.

#### Claim 5

The rejection of base claim 1 is incorporated. Beadle further teaches wherein receiving the non-native software instruction at the device comprises receiving an intermediate language instruction at the device.

#### Claim 6

The rejection of base claim 1 is incorporated. Beadle further teaches wherein receiving the non-native software instruction at the device comprises receiving Java byte code at the device.

#### Claim 7

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The rejection of base claim 1 is incorporated. Claim recites limitations, which have been addressed in claim 4, therefore, is rejected for the same reasons as cited in claim 4.

#### Claim 11

The rejection of base claim 1 is incorporated. Beadle further teaches wherein generating the first native software instruction comprises compiling the non-native software instruction at the device using a just-in-time compiler.

#### Claim 17

Claim recites limitations, which have been addressed in claims 1-3, 5-6 and 11, therefore, is rejected for the same reasons as cited in claims 1-3, 5-6 and 11.

#### Claims 18-20, 23, 28

Claims recite limitations, which have been addressed in claims 2-3, 5, 11, therefore, are rejected for the same reasons as cited in claims 2-3, 5, 11.

5. Claims 8-10, 12-16, 21-22, 24-27, 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beadle in view of Cierniak further in view of Souloglou et al. (US 2002/0100030 A1, "Souloglou").

#### Claim 8

The rejection of base claim 1 is incorporated. Beadle does not expressly disclose wherein the first native software instruction comprises an X-bit wide instruction, the second native software instruction comprises a Y-bit wide instruction, and X is less than Y. However, Souloglou discloses a method of optimizing received intermediate language instructions and generating native instructions therefor (see at least paragraphs [0002]-[0003]) wherein the first native software instruction comprises an X-bit (i.e., 16-bit or Thumb) wide instruction, the second native software instruction comprises a Y-bit (i.e., 32-bit or ARM) wide instruction, and X is less than Y (see at least *complex expressions, 32 bit operations, 16 bit operations* paragraphs [0048]-[0056]). Beadle and Souloglou are analogous art because they are both directed to generating native code from intermediate language instructions. It would have been obvious to one of ordinary skill in the pertinent art at the time the invention was made to incorporate the teaching of Souloglou into that of Beadle for the inclusion of generating 16-bit and 32-bit native instructions. And the motivation for doing so would have been provide native code representing operations of different sizes (i.e., 16-bit or 32-bit) (see at least Souloglou paragraphs [0054]-[0055]).

#### Claim 9

The rejection of base claim 1 is incorporated. Souloglou further teaches wherein the first native software instruction comprises a 16-bit wide instruction, and the second native software instruction comprises a 32-bit wide instruction (see at least *complex expressions, 32 bit operations, 16 bit operations* paragraphs [0048]-[0056]).



Claim 10

The rejection of base claim 1 is incorporated. Souloglou further teaches wherein the first native software instruction comprises a Thumb instruction, and the second native software instruction comprises an ARM instruction (see at least *complex expressions, 32 bit operations, 16 bit operations* paragraphs [0048]-[0056]).

Claim 12

The rejection of base claim 1 is incorporated. Souloglou further teaches configuring a first code optimization option prior to generation of the first native software instruction, the first code optimization option causing smaller code to be generated; and configuring a second code optimization option prior to generation of the second native software instruction, the second code optimization option causing faster code to be generated (see at least paragraphs [0004], [0077]).

Claim 13

The rejection of base claim 1 is incorporated. Souloglou further teaches wherein generating a first native software instruction comprises generating a first plurality of native software instructions, and generating a second native software instruction comprises generating a second plurality of native software instructions, the method further comprising: counting a first number of instructions contained within the first plurality of native software instructions; counting a second number of instructions

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contained within the second plurality of native software instructions; and comparing the first number of instructions and the second number of instructions, wherein executing the first native software instruction is in response to one of (i) the second number of instructions equaling the first number of instructions and (ii) the second number of instructions exceeding the first number of instructions (see at least paragraphs [0109], [0084]).

#### Claim 14

The rejection of base claim 13 is incorporated. Souloglou further teaches comparing the first number of instructions and the second number of instructions, wherein executing the second native software instruction is in response to the first number of instructions not exceeding the second number of instructions by more than a predetermined threshold (see at least paragraphs [0109], [0084]).

Claims 15-16, 21-22, 24-27, 29-30

Claims recite limitations, which have been addressed in claims 2, 8-10, and 13-14, therefore, are rejected for the same reasons as cited in claims 2, 8-10 and 13-14.

#### ***Conclusion***

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chrystine Pham whose telephone number is 571-272-3702. The examiner can normally be reached on Mon-Fri, 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Q. Dam can be reached on 571-272-3695. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



**TUAN DAM**  
**SUPERVISORY PATENT EXAMINER**